

CLAIMS

What is claimed is:

1. A method comprising:

applying repeatedly a high power pulse to a plasma chamber to increase the reaction rate of plasma within the chamber;
applying, between applications of the high power pulses, a low power pulse.

2. The method of Claim 1, wherein the low power pulses are applied to allow the temperature of the plasma within the plasma chamber to diminish.

3. The method of Claim 1, wherein the high power and low power pulses alternate in spaced time intervals

4. The method of Claim 1, wherein applying a high power pulse comprises applying the power at evenly spaced intervals with a constant spacing of time between the intervals.

5. The method of Claim 1, further comprising modulating the amplitude of the high power pulse based on the conditions of the plasma.

6. The method of Claim 1, wherein applying the high power pulse comprises pulsing the coil at a selected alternating current frequency.

7. The method of Claim 6, wherein the selected frequency is selected based on the conditions of the plasma.

8. The method of Claim 1, wherein applying the low power pulse comprises actively detuning a pulsed power generator with respect to the plasma.

9. The method of Claim 8, wherein detuning comprises changing the operating frequency of the power generator beyond the range of an active matching network between the power generator and the plasma.

10. The method of Claim 8, wherein detuning comprises changing the settings of an active matching network that is coupled between the power generator and the plasma.

11. The method of Claim 1, where applying the high and low power pulses comprise applying the high and low power pulses through an air-coupled coil.

12. The method of Claim 1, where the high and low power pulses are applied to the plasma through a coil magnetically coupled to the plasma through a magnetic core;

13. The method of Claim 1, wherein applying a high power pulse comprises modulating the amplitude of a pulsed power generator;

14. An apparatus comprising:
a coil to couple power to a plasma in a plasma chamber; and
a pulsed power generator coupled to the coil to repeatedly apply a high power pulse to the coil to increase the reaction rate of the plasma within the chamber and to apply a low power pulse to the coil between applications of the high power pulses.

15. The apparatus of Claim 14, wherein the low power pulses allow the temperature of the plasma within the plasma chamber to diminish.

16. The apparatus of Claim 14, wherein the high power and low power pulses alternate in spaced time intervals

17. The apparatus of Claim 14, wherein the pulsed power generator modulates the amplitude of the high power pulse based on the conditions of the plasma.

18. The apparatus of Claim 14, wherein the pulsed power generator applies the high power pulse by pulsing the coil at a selected alternating current frequency.

19. The apparatus of Claim 14, wherein the pulsed power generator applies the low power pulse by actively detuning with respect to the plasma.

20. The apparatus of Claim 14, further comprising an active matching network between the pulsed power generator and the coil and wherein the pulsed power generator applies the low power pulse by changing the operating frequency of the power generator beyond the range of the active matching network.

21. The apparatus of Claim 14, further comprising an active matching network between the pulsed power generator and the coil and wherein the pulsed power generator applies the low power pulse by changing the settings of the active matching network.

22. The apparatus of Claim 14, wherein the coil comprises an air-coupled coil.

23. The apparatus of Claim 14, wherein the coil comprises a magnetic core.

24. A machine-readable medium having stored thereon data representing instructions which, when executed by a machine, cause the machine to perform operations comprising:
applying repeatedly a high power pulse to a plasma chamber to increase the reaction rate of plasma within the chamber;

applying, between applications of the high power pulses, a low power pulse.

25. The medium of Claim 24, wherein the instructions for applying a high power pulse comprise instructions which, when executed by the machine, cause the machine to perform further operations comprising applying the power at evenly spaced intervals with a constant spacing of time between the intervals.

26. The medium of Claim 24, further comprising instructions which, when executed by the machine, cause the machine to perform further operations comprising modulating the amplitude of the high power pulse based on the conditions of the plasma.

27. The medium of Claim 24, wherein the instructions for applying the low power pulse comprise instructions which, when executed by the machine, cause the machine to perform further operations comprising changing the operating frequency of a power generator beyond the range of an active matching network that is connected between the power generator and the plasma.

28. The medium of Claim 24 wherein the instructions for applying a high power pulse comprise instructions which, when executed by the machine, cause the machine to perform further operations comprising modulating the amplitude of a pulsed power generator;